

In the Claims:

Please amend the Claims to read as follows:

- 1 1. (Allowed) A power controller for powering an induction electrical machine, comprising:
2 -- a first AC conductor and a second AC conductor for connecting to an AC line power source;
3 -- a first controlled switch circuit which includes a first controlled switch element having a first
4 power terminal connected to said first AC conductor, a second terminal, and a control
5 input, and a diode connected in shunt across the power terminals thereof;
6 -- a second controlled switch circuit which includes a second controlled switch element having a
7 first power terminal connected to said second AC conductor, a second terminal, and a
8 control input, and a diode connected in shunt across the power terminals thereof;
9 -- a power capacitor having terminals connected to the second power terminals of said first and
10 second controlled switch elements, respectively;
11 -- load terminals coupled to the terminals of said power capacitor; and
12 -- a control circuit having at least one output coupled to the control inputs of said first and second
13 controlled switch elements, and at least one sensor input connected to at least one of said
14 load terminals.
- 1 2. (Allowed) The power controller according to Claim 1 wherein said first and second controlled
2 switching elements each include a switching transistor.
- 1 3. (Allowed) The power controller according to Claim 2 wherein said switching transistor is a
2 MOSFET bipolar transistor.
- 1 4. (Allowed) The power controller according to Claim 2 wherein said switching transistor is an
2 IGBT.
- 1 5. (Allowed) The power controller according to Claim 2 wherein said switching elements
2 include at least one semiconductor transistor across an associated one of said diodes.

1 6. (Allowed) The motor speed controller according to Claim 1, also comprising optical means
2 coupling said control circuit with the control inputs of said first and second controlled switch
3 elements.

1 7. (Allowed) The motor speed controller according to Claim 1, comprising non-optical, non-DC
2 coupling means coupling said control circuit with the control inputs of said first and second
3 controlled switch elements.

1 8. (Allowed) A motor speed controller for powering an AC induction motor, comprising:
2 -- a first AC conductor and a second AC conductor for connecting to a source of AC line power;
3 -- a first controlled switch circuit which includes a first controlled switch element having a first
4 power terminal connected to said first AC conductor, a second power terminal, and a
5 control input, and a first diode connected in shunt across said power terminals thereof;
6 -- a second controlled switch circuit which includes a second controlled switch element having a
7 first power terminal connected to said second AC conductor, a second power terminal,
8 and a control input, and a second diode connected in shunt across said power terminals
9 thereof;
10 -- a first power capacitor having a first terminal and a second terminal, with a third controlled
11 switch disposed between the first terminal of said first power capacitor and the second
12 power terminal of the first controlled switch element, said third controlled switch circuit
13 including a third controlled switch element and a third diode connected in shunt across
14 said third controlled switch element;
15 -- a second power capacitor having a first terminal and a second terminal, with a fourth
16 controlled switch circuit disposed between the first terminal of said second power
17 capacitor and the second power terminal of the second controlled switch element, said
18 fourth controlled switch circuit including a fourth controlled switch element and a fourth
19 diode connected in shunt across said fourth controlled switch element, said third and

20 fourth controlled switch elements each having a respective control input;
21 -- output terminals coupled to the second power terminals of said first and second controlled
22 switch elements; and
23 -- a control circuit having at least one output coupled to the control inputs of said first, second,
24 third, and fourth controlled switch elements, and at least one sensor input connected to at
25 least one of said load terminals.

1 9. (Allowed) A power controller according to Claim 8, wherein said the second terminals of said
2 ~~first and second power capacitors~~ are coupled to said second AC conductor and said first AC
3 conductor, respectively.

1 10. (Allowed) A power controller according to Claim 8, wherein said the second terminals of
2 said first and second power capacitors are coupled to the second power terminals of said second
3 controlled switch element and of said first controlled switch element, respectively.

1 11. (Allowed) A power controller according to Claim 8, wherein optical means couple the
2 control circuit to the first, second, third and fourth controlled switch elements.

1 12. (Allowed) A power controller according to Claim 8, wherein non-optical, non-DC coupling
2 means couple the control circuit to the first, second, third and fourth controlled switch elements.

1 13. (Presently Amended) Power controller for powering an induction motor or similar load,
2 comprising
3 input means ~~adapted to connect~~ for connecting with a source of AC line power, said line
4 power having a waveform and a line frequency;
5 output means adapted to connect to an AC load;
6 variable drive circuit means receiving line power from said input means and delivering
7 AC power via said output means to said AC load; said variable drive means including means for

8 storing and switching at least a portion of said line power and selectively passing said line power
9 to said output means in a plurality of modes, including (a) said input AC line power being
10 applied directly to said load; (b) said input AC line power being applied to said load with current
11 added at portions of said waveform to reshape the AC waveform at said line frequency; and (c) a
12 reshaped sinusoidal or non-sinusoidal waveform being applied to said load at a frequency that is
13 different from said line frequency; and said variable drive circuit means including a control
14 circuit having sensor inputs coupled across said load at ~~to~~ said output means for continuously
15 monitoring and controlling the waveform and frequency of the power applied to said load.

1 14. (Presently Amended) Power controller ~~according to Claim 13~~ for powering an induction
2 motor or similar load, comprising

3 input means for connecting with a source of AC line power, said line power having a
4 waveform and a line frequency;

5 output means adapted to connect to an AC load;

6 variable drive circuit means receiving line power from said input means and delivering
7 AC power via said output means to said AC load; said variable drive means including means for
8 storing and switching at least a portion of said line power and selectively passing said line power
9 to said output means in a plurality of modes, including (a) said input AC line power being
10 applied directly to said load; (b) said input AC line power being applied to said load with current
11 added at portions of said waveform to reshape the AC waveform at said line frequency; and (c) a
12 reshaped sinusoidal or non-sinusoidal waveform being applied to said load at a frequency that is
13 different from said line frequency; and said variable drive circuit means including a control
14 circuit having sensor inputs coupled to said output means for monitoring and controlling the
15 waveform and frequency of the power applied to said load;

16 wherein said variable drive circuit means includes first and second optically driven switch
17 circuits each coupled between a respective AC input conductor and a respective output conductor
18 of said output means, and a pair of diodes connected across current-carrying conductors of said
19 first and second optically driven switch circuits, respectively.

1 15. (Original) Power controller according to Claim 14 wherein variable drive circuit means
2 includes a capacitor and an optically controlled switch in series therewith and coupled to one of
3 said output conductors.

1 16. (Original) Power controller according to Claim 14 wherein said control circuit includes
2 optical switching means optically coupled to said optically driven switches.

1 17. (Presently Amended) Power controller for powering an induction motor or similar load,
2 comprising
3 - a first AC conductor and a second AC conductor for connecting to an AC line power source;
4 - a controlled switched bridge, including a bridge element having at least first and second AC
5 inputs, and DC terminals₁[:] and a switch element connected across the DC terminals of the
6 switched bridge element₁[:]
7 - a control circuit having an input sensor connected across said load for providing gating signals
8 for selectively gating the switch element of the controlled switched bridge; and
9 - means in series with said AC conductors for coupling across an armature of said AC induction
10 motor.

1 18. (Presently amended) ~~The p~~ Power controller of Claim 17, for powering an induction motor
2 or similar load, comprising
3 - a first AC conductor and a second AC conductor for connecting to an AC line power source;
4 - a controlled switched bridge, including a bridge element having at least first and second AC
5 inputs, and DC terminals, and a switch element connected across the DC terminals of the
6 switched bridge element;
7 - a control circuit for providing gating signals for selectively gating the switch element of the
8 controlled switched bridge; and
9 - means in series with said AC conductors for coupling across an armature of said AC induction

10 motor; and further comprising

11 sensor means coupled to an input of said control circuit for providing a motor speed input
12 signal to said control circuit based on a sensed condition of said AC load.

1 19. (Presently amended) The power controller of Claim ~~17~~ 18, wherein said bridge element
2 includes a diode bridge, and said switch element includes a MOSFET having a drain and a source
3 respectively connected to said DC terminals.

1 20. (Presently Amended) Power controller for powering an induction motor or similar load,
2 comprising

3 input means ~~adapted to connect~~ for connecting with a source of AC line power, said line
4 power having an AC waveform;

5 output means adapted to connect to an AC load;

6 variable drive circuit means receiving line power from said input means and delivering
7 AC power via said output means to said AC load; said variable drive means including means for
8 storing and switching at least a portion of said line power and selectively passing said line power
9 to said output means in a plurality of modes, including (a) said input AC line power being
10 applied directly to said load; and (b) said input AC line power being applied to said load with
11 current added at portions of said waveform to reshape the AC waveform; and said variable drive
12 circuit means including a control circuit having sensor inputs coupled across said load at ~~to~~ said
13 output means for continuously monitoring and controlling the waveform and frequency of the
14 power applied to said load.